Stationary Properties of High-T_c SNS Junctions

A.W. Kleinsasser
Jet Propulsion Laboratory
California Institute of Technology
Pasadena, CA 91109, USA

Superconductor-normal-superconductor (SNS) junctions form the basis for most of the present worldwide effort to develop high temperature superconductor (HTS) Josephson devices junctions for microelectronic applications. From the beginning, the behavior of nominally-SNS devices reported by numerous groups was casually interpreted within conventional proximity effect theory. The early claims, however, were unsupported, with nearly all HTS SNS junctions far better described via transport dominated by unintended electrical paths through the normal interlayers. Then, within the past 2-3 years, SNS junctions were fabricated which are well-described by conventional proximity effect theory, although the vast majority of the successful experiments results to date address stationary properties (i.e., critical current). This presentation will review the maturing field of HTS SNS devices. The status of recent experimental results and their theoretical interpretation will be discussed, emphasizing how theory can help direct the development of practical circuit technology.

Research performed by the Center for Space Microelectronics Technology, Jet Propulsion Laboratory, California Institute of Technology, sponsored by the National Aeronautics and Space **Administration.**